

What is claimed is:

1. A method for cleaning semiconductor articles, comprising the steps  
of:

placing one of more articles into a chamber;

5 rotating the articles within the chamber;

applying a heated liquid comprising water onto the rotating articles;

introducing ozone gas and carbon dioxide gas into the chamber, with  
the ozone oxidizing contaminants on the articles, to clean the articles.

2. The method of claim 1 wherein the liquid is heated to 50-200C.

10 3. The method of claim 1 wherein the liquid is heated to 75-150C.

4. The method of claim 1 wherein the liquid includes an acid.

5. The method of claim 1 further including the step of rinsing the  
articles.

15 6. The method of claim 5 further including the step of drying the  
articles.

7. The method of claim 6 further including the step of drying the articles using isopropyl alcohol.

8. The method of claim 1 wherein the ozone is entrained in the liquid, before the liquid is applied to the articles.

5 9. The method of claim 1 wherein the heated liquid is sprayed onto the articles.

10. The method of claim 1 wherein the articles comprise semiconductor material wafers.

10 11. The method of claim 1 wherein the liquid includes hydrogen peroxide.

12. A method for cleaning a wafer, comprising the steps of:

rotating the wafer;

applying a heated liquid comprising water onto the wafer;

supplying ozone gas and carbon dioxide gas to the wafer, with the

15 ozone oxidizing contaminants on the wafer, to clean the wafer.

13. The method of claim 12 wherein the liquid is heated to 50-200C.

14. The method of claim 12 wherein the ozone is entrained in the liquid, before the liquid is applied to the articles.

15. The method of claim 12 further including the step of placing the wafer into a chamber, and wherein the ozone gas is mixed with the carbon dioxide  
5 gas before the gases are supplied to the wafer in the chamber.

16. The method of claim 12 wherein the heated liquid is sprayed onto the rotating wafer.

17. A method for cleaning semiconductor articles, comprising the steps of:

10 placing one or more articles into a chamber;

applying a liquid including water heated to 50-200C generally uniformly onto a surface of the article;

introducing ozone gas and carbon dioxide gas into the chamber, with the ozone oxidizing contaminants on the surface of the article.

15 18. The method of claim 17 further including the step of rotating the article.

19. The method of claim 17 further including the step of applying the liquid by spraying.

20. The method of claim 17 wherein the water is heated to 75-150C.